



Hands-on Series: Caring for our Forest

Landowner Woodlot Handbook

Maintenance of Forests Following Ice Storm Events

1

Benefits of Private Forests

Privately-owned forests are important components of Ontario's forested landscapes and provide numerous environmental, social and economic benefits to both property owners and the general public. Forests clean the air, filter our water, contribute to local and landscape biodiversity objectives, support local economies by providing various wood products such as lumber and veneer, act as a source of fuel wood, and provide recreational and aesthetic value. Well-managed forests also sequester carbon, both in standing trees and in the wood products that are derived from their management.

2

How Ice Storms Can Damage Trees

Forests are susceptible to extreme weather events, including ice storms, which can result in the loss of individual trees or even entire forest stands. The following is a guide to woodlot owners on how to assess ice damage and what to do to make the most of ice-damaged forests. For additional details and more information, visit the Forests Ontario website at **www.forestsontario.ca**.

While ice storms can have significant impacts on forests, they also play an important role in the natural cycle of forest succession. By opening up the canopy, disturbance events such as ice storms expose the forest floor to sunlight. This allows existing shade-tolerant trees in the understory a chance to grow and provides faster-growing species with an opportunity to establish themselves and compete for a future place in the forest's canopy. In a sense, severe disturbances are a natural event and part of many forests' natural succession.

However, ice storms can often have negative implications and can frustrate established management objectives of individual forests. The sections below are intended to provide a general overview of possible options and actions that can be implemented following ice storms. For more comprehensive information, please contact Forests Ontario, consult with a forestry professional, and refer to the resources referenced in this document.



3

Assessing and Caring for Your Forest

Consider Your Goals

How you respond to ice storm damage will depend on whether you have a management plan or specific objectives for your forest. For example, if you want to provide habitat for wildlife or recreational opportunities, you may want to limit your response efforts to simply clearing access points and walking trails. Retaining damaged trees can contribute to wildlife objectives by providing snag trees for nesting and down-woody-debris for small mammal habitat. However, if you are managing your forest for timber or other wood products, more effort is likely required. You might want to harvest damaged trees within a few years before they lose their commercial value.

If you do not have a management plan or specific objective for your forest and would like to discuss your options and take advantage of available resources, including information on property tax incentives, contact the Forests Ontario office or visit the website at www.forestsontario.ca.

Safety First

- Please take care when approaching, inspecting or caring for a damaged tree. Trees should only be inspected when there is no chance of personal injury. Suspended branches and split trunks can pose a significant safety risk and broken branches that appear wedged in the crown can fall without any warning, resulting in serious personal harm.
- Do not approach, attempt to take down, or prune trees that are close to power lines. (Contact local utility officials.)
- Proper safety equipment should be worn when removing or pruning any tree (safety glasses, hard hat, steel-toed boots, etc.).
- If possible, you should never work alone when pruning or removing trees from your forest. If you do plan on working alone, please take a cell phone or two-way radio with you and ensure that someone else knows where you are going and when you plan to return.
- If there is severe damage or a potential safety issue, or if you are uncertain as to how to proceed, call a professional. To protect yourself and your forest, ensure that you are working with a qualified forestry professional and that you hire a member of the Ontario Professional Foresters Association (OPFA). For help finding a registered professional forester in your area, visit the OPFA website at www.opfa.ca.



Assessing Your Forest

The best thing that you can do following an ice storm is to conduct a thorough assessment of your property to determine the extent of damage and to allow you to begin developing an appropriate response and management strategy. A thorough, step-by-step process on how to assess your property can be obtained from the LandOwner Resource Centre document *Extension Notes—Caring for Ice Damaged Woodlots and Plantations*. This resource is available on the Forests Ontario website (http://www.forestsontario.ca/index.php/ice_storm_damage).

Part of surveying your property will be to assess the damage to individual trees. The chance of survival and recovery of a tree depends largely on the type and extent of damage sustained. The most common types of damage to individual trees include the loss of crown/branches and the bending of stems. Table 1 provides a general indication of what you can expect in terms of survival and recovery following various types of damage.

In severe cases, trees may suffer split trunks or be uprooted. In most cases, particularly when dealing with mature trees, these trees will not survive. Whether you wish to harvest these trees to salvage their remaining economic value or simply leave them in the forest will vary from owner to owner and will depend largely on individual management objectives.

Not every tree on your property will necessarily need to be assessed. Generally you can effectively gauge the extent of ice storm damage by assessing a representative sub-sample of forested areas and trees. You are encouraged to visit the Forests Ontario website (www.forestsontario.ca) and to develop a comprehensive assessment plan prior to conducting any survey activities.

Address hazards or threats to safety immediately. Otherwise it is advised that you wait one growing season before assessing your forest. By waiting, you will be able to see the full effect of the storm without incurring any long-term financial losses and you may find that the forest recovers quite well on its own.

Expectations and Recommended Actions Following a Storm

For information on how to care for and maintain individual damaged trees, please consult the Forests Ontario *Homeowner Booklet: Maintenance of Trees Following Ice Storm Events* or visit their website at www.forestsontario.ca.

How you, as a property owner, respond to ice storms at a broader scale (at the forest level) will depend largely on the extent of damage sustained, the type of forest impacted (species composition and age), and your management objectives.

Table 1.

Crown loss

(Modified from the LandOwner Resource Centre Extension Notes—Caring for Ice-Damaged Trees)

Loss of Crown	Expected Outcome
0–25%	Little/minimal effect
26–50%	Very likely to survive, recovery may take several years
51–75%	Fair chance of survival, recovery may take several years
> 75% crown loss	Low chance of survival, however, may survive depending on the species

Bent trees

(Modified from the LandOwner Resource Centre Extension Notes—Caring for Ice-Damaged Trees)

Degree of bend in stem	Expected Outcome
< 20-degree bend	Will survive and recover
< 60-degree bend	Good chance of survival and recovery
> 60-degree bend	Low chance of survival and recovery

Table 2. Expectations and recommended actions for mature and immature hardwood and mixed wood forests following ice storms (Modified from LandOwner Resource Centre *Extension Notes—Caring for Ice Damaged Woodlots and Plantations* posted on the Forests Ontario website (www.forestsontario.ca/index.php/ice_storm_damage).

Mature Hardwood and Mixed Wood Forest Area

Minimal Damage	• most trees will survive and grow a new crown within 10 years • harvest only those trees that have severely damaged stems or, if economic value is important, damaged or deteriorating trees that could lose their future potential for wood products • leave some damaged or deteriorating trees to provide snags and cavity trees for wildlife • monitor stand's health over several years
Moderate Damage	• most trees with 26% to 75% crown damage will survive but their growth rate may be reduced • most trees with more than 75% crown damage will not survive, except for basswood, beech, ash, poplar and willow • wait until the end of the first growing season to decide which trees to harvest • consider getting expert advice to determine which trees should be harvested to improve the long-term health of the forest • retain uncommon species, even if severely damaged, to maintain the diversity of species in the stand
Severe Damage	• up to one quarter of the trees with more than 75% crown loss will survive • it may take several years for severely damaged trees to decline and die • extensive crown damage could open up the forest canopy allowing more sunlight to reach the forest floor, which will encourage the growth of species that need sunlight to become established and change the species composition of the future forest • wait until the end of the first growing season to decide which trees to harvest • harvest severely damaged trees • leave some severely damaged trees to provide snags and cavity trees for wildlife • retain uncommon species, even if severely damaged, to maintain the diversity of species in the stand • consider getting expert advice on the potential and necessity of a commercial harvest, the implications of future changes in species composition and the best courses of action

Immature Hardwood and Mixed Wood Forest Area

Minimal Damage

- most trees will recover
- trees bent less than 20 degrees will straighten
- most trees bent 20 to 60 degrees will likely straighten
- trees bent more than 60 degrees are not likely to straighten
- allow bent trees until mid-summer to recover before taking action
- cut broken trees to the ground before they get their leaves in the spring to encourage sprouting from the stumps

Moderate Damage

- cut broken trees to the ground before they get their leaves in the spring to encourage sprouting from the stumps
- allow bent trees until mid-summer to recover before taking action
- consider regenerating areas of the stand that do not recover by mid-summer by cutting all trees to the ground before the leaves come out the following spring

Severe Damage

- bent trees are likely to survive but will remain bent
- cut broken trees and trees that are bending more than 60 degrees to the ground before they get their leaves in the spring to encourage sprouting from the stumps
- consider regenerating areas of the stand that do not recover by mid-summer by cutting all trees to the ground before the leaves come out the following spring

Table 2 provides some information on what you can expect following ice storms in hardwood and mixed wood dominated forests and outlines some potential follow-up actions. Additional information on expectations and recommended actions for other forest types (including softwood dominated forests and plantations) can be obtained from the LandOwner Resource Centre *Extension Notes—Caring for Ice Damaged Woodlots and Plantations* posted on the Forests Ontario website (http://www.forestsontario.ca/index.php/ice_storm_damage).

Table 2 is intended to provide some general recommendations only and you should determine your own specific course of action in support of your management objectives. Please contact a professional for assistance in the development of management objectives or activities if you are uncertain on how to proceed.

Benefits of Ongoing Maintenance and Care

A healthy, well-managed forest may be less susceptible to damage and may recover more quickly following a disturbance. Although, in the case of severe storms, it may not be possible to escape damage to even the best managed forests. You are encouraged to take an active interest in the long-term management of your forested property and to develop stewardship plans to help guide present and future management activities. Key steps in developing a plan for your property include:

- Becoming more familiar with your property and the types of trees/forest growing on it
- Identifying and documenting objectives for your property
- Developing, scheduling and implementing management activities
- Monitoring your property and ensure appropriate long-term management direction

As noted above, storm damage cannot always be avoided. For more active landowners, however, there are specific management activities that can be implemented, including the creation of windbreaks, maintaining a diversity of tree species and age classes, and ensuring tree species are well-suited to the site conditions on your property. All landowners can take some simple steps to ensure a healthy, productive forest. You are encouraged to develop a management plan for your forest. For assistance in developing a plan, including the identification of management objectives and associated maintenance activities, please contact a professional. To protect yourself and your forest,

ensure that you are working with a qualified forestry professional and that you hire a member of the Ontario Professional Foresters Association (OPFA). For help finding a registered professional forester in your area, visit the OPFA website at www.opfa.ca.

For additional information and resources to help you develop a plan for the long-term management of your forest area, please contact Forests Ontario or visit their website at (www.forestsontario.ca).

Climate Change

Climate change is expected to increase the frequency of ice storms in Ontario, most notably in the northern parts of the province. As a result, increased damage to forests may follow. In addition, warmer temperatures could result in an increase in the number of invasive species and drier growing seasons, both which would have a negative impact on private forests.

For tips on how you can help minimize the impacts of climate change on forests, visit the Forest Ontario website at http://www.forestsontario.ca/index.php/ice_storm_damage.

Resources

The information in this booklet was adapted from the following resources, all of which can be accessed from the Forests Ontario website (www.forestsontario.ca):

Extension Notes—Caring for Ice-Damaged Trees (LandOwner Resource Centre)
Extension Notes—Caring for Ice-Damaged Woodlots and Plantations (LandOwner Resource Centre)
A Guide to Stewardship Planning for Natural Areas (Ontario Ministry of Natural Resources)
Possible impacts of climate change on freezing rain in south-central Canada using downscaled future climate scenarios (Natural Hazards Earth Science System Sciences—Volume 7)
Tree Survival 15 Years after the Ice Storm of January 1998 (United States Department of Agriculture)
Climate Change in Ontario (ISA Ontario)
Climate is What You Expect, Weather is What You Get (article by Steve D'Eon in *Our Forest*, Winter 2014)

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